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*Oropsylla montana*, a common flea of ground squirrels in California and the primary vector for plague

## California Plague Report, Winter 2011

The California Department of Public Health (CDPH) collaborates with local, state, and federal agencies to conduct a statewide plague surveillance program. The CDPH, Vector-Borne Disease Section (VBDS) collects, collates, and analyzes information on suspect and confirmed plague activity among humans, domestic pets, and wild animals throughout California. This winter report summarizes plague activity in California through November, 2011.

### Human surveillance

No cases of plague in humans have been reported.

### Domestic pets

VBDS previously reported a domestic cat from the Beckwourth area of Plumas County that tested positive for plague bacteria. No additional cases of plague in domestic pets have been reported.

### Wild animals

The VBDS plague surveillance program received 440 test results through November for 224 rodents and 216 wild carnivores from 21 counties (Table 1).

The 224 rodents included: 65 California ground squirrels from four counties, 7 golden-mantled ground squirrels from two counties, 2 Belding's ground squirrels and 2 Douglas' squirrels. Five chipmunk species totaling 123 animals included: 83 yellow-pine

chipmunks from 4 counties, 9 Merriam's chipmunk from two counties, 22 shadow chipmunks, 7 lodgepole chipmunks and 2 Sonoma chipmunks. Also sampled were 14 mice, 10 woodrats, and a kangaroo rat. The 22 aforementioned shadow chipmunks were sampled from Pack Saddle campground, Tahoe National Forest, Sierra County in late July. One chipmunk from this area tested positive for plague antibody (1:8192). No other indicators of plague activity were noted at this location and all other rodents, tested through November, were plague antibody negative.

The 216 carnivores tested for plague antibody included: 164 coyotes from thirteen counties, 22 black bears from four counties, 9 raccoons from two counties, 9 mountain lions from five counties, 3 bobcats from two counties, 8 striped skunks and one gray fox. Previously in 2011, VBDS reported a black bear from Yosemite National Park, Mariposa County and two coyotes from Modoc County as positive for plague antibody (1:64, 1:32, and 1:32, respectively). Further carnivore evidence of plague activity from Yosemite National Park this year included a second antibody positive black bear (1:128). All other carnivores tested negative for plague antibody.

These results do not include data collected from plague surveillance programs of local agencies that conduct their own testing.

**Table 1. VBDS plague surveillance results through November 2011**

County Location	No. rodents	No. carnivores	Positive specimens		
			Species	Result	Month
<b>Butte</b>		2			
<b>El Dorado</b>	14				
<b>Fresno</b>		9			
<b>Glenn</b>	2				
<b>Inyo</b>	1				
<b>Kern</b>		54			
<b>Los Angeles</b>		5			
<b>Mariposa</b>		13			
Yosemite NP: Yosemite Valley			Black Bear	1:64	May
Yosemite NP: Yosemite Valley			Black Bear	1:128	September
<b>Mendocino</b>		18			
<b>Modoc</b>	11	20			
Eagleville: 5E			Coyote	1:32	January
Lake City: 5NE			Coyote	1:32	January
<b>Monterey</b>		10			
<b>Plumas</b>	36	18			
Beckwourth: 4N			Domestic Cat	POS	July
<b>Riverside</b>	67				
<b>San Benito</b>		35			
<b>San Bernardino</b>	19				
<b>San Luis Obispo</b>		7			
<b>Santa Clara</b>	8				
<b>Shasta</b>		6			
<b>Sierra</b>	66	2			
Tahoe NF: Pack Saddle Campground			Chipmunk, S	1:8192	July
<b>Siskiyou</b>		14			
<b>Yuba</b>		3			
<b>Total</b>	224	216			

POS: *Yersinia pestis* bacteria

Chipmunk, S: Shadow Chipmunk

## **Editorial Comment**

### *Plague activity in California*

Rainfall amounts for California's 2011 water year (Oct 2010 – Sep 2011) were well above historical averages for the northern and central portions of the state, but these regions have received little precipitation since October (California Department of Water Resources data, [http://cdec.water.ca.gov/cgi-progs/products/PLOT\\_ESI.2011.pdf](http://cdec.water.ca.gov/cgi-progs/products/PLOT_ESI.2011.pdf) [http://cdec.water.ca.gov/cgi-progs/products/PLOT\\_FSI.2011.pdf](http://cdec.water.ca.gov/cgi-progs/products/PLOT_FSI.2011.pdf)). The above average water year provided abundant food resources and could portend an increase in rodent populations for 2012. Although evidence of recent plague activity was observed, primarily in Yosemite Valley black bears (2 pos/14 tested, 14%) and a Gold Lakes basin area chipmunk (Tahoe National Forest), no indications of epizootic activity were observed.

### *Plague activity in the United States*

In New Mexico, two human plague cases along with five plague-infected domestic pets were previously reported in 2011. An additional plague-infected domestic pet was reported in July, bringing the year's

total to four infected dogs and two infected cats (New Mexico Department of Health).

In September, Oregon health officials reported a Umatilla resident contracted plague while hunting in Lake County, Oregon. He received treatment and has since recovered (Lake County Public Health Department). Earlier this year, plague was detected in a domestic cat from the Prineville area of Cook County, Oregon. Two human cases were previously reported in Lake County, Oregon in 2010. Cook and Lake Counties are located in the central and southern Oregon regions, respectfully, near the east side of the Cascade Mountains and within the northwestern edge of the Great Basin.

Plague continues to be active in Colorado. In addition to finding plague in a domestic cat and tree squirrel from Boulder, Colorado earlier this year, health officials reported in September that plague has decimated prairie dog colonies in Westminster,

Colorado. Health officials applied pesticides to prairie dog dens for flea control to lower the risk of flea bites to pets and humans (The Denver Post).

*Worldwide plague activity, 2011* (ProMED-mail posts)

On Tuesday, 11 Oct 2011, the Madagascar Ministry of Health declared a pneumonic plague epidemic in the district of Miarinarivo, within the province of Antananarivo, the Malagasy Capital (ProMED 20111014.3088). Health officials originally reported 310 cases of plague and 45 deaths from the beginning of 2011 to the end of March (UNICEF: Madagascar, April 2011). However, in April the total number was revised to around 200 people infected and 60 deaths (ProMED 20110401.1006). Reports from clinicians treating plague victims indicate antibiotic treatment is no longer as effective as it once was. One reason for the increase in pneumonic plague deaths in Madagascar may be the development of antibiotic resistance in the plague bacterium. Madagascar was the location of the isolation of multi-antimicrobial resistant *Y. pestis* in 1995 (Galimand M, Guiyoule A, Gerbaud G, et al: Multi drug resistance in *Yersinia pestis* mediated by a transferable plasmid. *N Engl J Med* 1997; 337: 677-81). The strain was resistant to chloramphenicol, streptomycin and tetracycline but sensitive to fluoroquinolones and trimethoprim as well as other aminoglycosides. This was an ominous observation with serious implications. It was not clear if this naturally occurring strain had persisted or spread (ProMED 20111014.3088).

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